

PATENT

UNUS #97-0029-UNI
CASE #F7371(V)

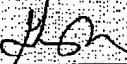
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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

on June 9, 2003

6/9/03


Gerard J. McGowan, Jr.
Reg. No. 29,412

Date of Signature

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Byass et al.
Serial No.: 09/308,140
Filed: December 30, 1999
For: CARROT ANTIFREEZE POLYPEPTIDES

Group: 1653
Examiner: S. Liu
Edgewater, New Jersey 07020

AMENDMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 23313-1450

Sir:

In response to the Office Action mailed January 7, 2003, a two month extension of time for response to which is being requested, please amend the application as follows:

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F1
1. (Thrice amended) Isolated polypeptides having antifreeze activity which are obtained from carrots and which have an apparent molecular weight on sodium dodecyl sulfate polyacrylamide gel electrophoresis (SDS-PAGE) of 36 kDa and isoforms or derivatives thereof which still possess antifreeze activity.

F2
2. (Thrice amended) Isolated polypeptides having antifreeze activity comprising one or more fragments (A-E) of the amino acid sequence as follows:

(A) LEU-PRO-ASN-LEU-PHE-GLY-LYS (SEQ ID NO: 1)

(B) ILE-PRO-GLU-GLU-ILE-SER-ALA-LEU-LYS (SEQ ID NO: 2)

(D) SER-LEU-ARG-LEU-SER-SER-THR-SER-LEU-SER-GLY-PRO-VAL-PRO-LEU-PHE-PHE-PRO-GLN-LEU-X-LYS (SEQ ID NO: 4)

(C) LEU-THR-X-LEU-ASP-LEU-SER-PHE-ASN-LYS (SEQ ID NO: 3)

(E) X-X-GLY-VAL-ILE-PRO-X-GLN-LEU-SER-THR-LEU-PRO-ASN-LEU-LYS (SEQ ID NO: 5), wherein X is any amino acid.

F3
4. (Thrice amended) Isolated polypeptides having antifreeze activity having an amino acid sequence as represented in SEQ ID NO: 7 and isoforms and derivatives thereof which still possess antifreeze activity.

F4
7. (Thrice amended) A method of obtaining a polypeptide according to claim 2, comprising providing cold acclimatized carrot material containing said polypeptide, and purifying said polypeptide from the carrot material.

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BS
11. (Thrice amended) An isolated polypeptide that is specifically bound by an antibody which specifically binds to the polypeptide of claim 2.

PL
18. (Twice amended) An isolated polypeptide according to claim 11 which has anti-freeze activity.

21. (New) A food product comprising a polypeptide having antifreeze activity comprising one or more fragments (A-E) of the amino acid sequence as follows:

PL
(A) LEU-PRO-ASN-LEU-PHE-GLY-LYS (SEQ ID NO: 1)

(B) ILE-PRO-GLU-GLU-ILE-SER-ALA-LEU-LYS (SEQ ID NO: 2)

(D) SER-LEU-ARG-LEU-SER-SER-THR-SER-LEU-SER-GLY-PRO-VAL-PRO-LEU-PHE-PHE-PRO-GLN-LEU-X-LYS (SEQ ID NO: 4)

(C) LEU-THR-X-LEU-ASP-LEU-SER-PHE-ASN-LYS (SEQ ID NO: 3)

(E) X-X-GLY-VAL-ILE-PRO-X-GLN-LEU-SER-THR-LEU-PRO-ASN-LEU-LYS (SEQ ID NO: 5),
wherein the food product is a frozen confectionery product or a frozen vegetable with
the proviso that the food product is not a carrot, wherein X is any amino acid.

PL 3
23. (Amended) A food product comprising a polypeptide having antifreeze activity and having an amino acid sequence selected from the sequence as represented in SEQ ID No:1 7 and isoforms and derivatives thereof which still possess antifreeze activity wherein the food product is a frozen confectionery product or a frozen vegetable with the proviso that the food product is not a carrot.